

REMARKS

Claims 1-5 are pending in the present application, and are rejected. Claim 5 is herein canceled. Claim 1 is herein amended. No new matter has been entered.

Claim Rejections - 35 U.S.C. §102/103

Claims 1-5 are rejected as anticipated under 35 U.S.C. §102(b), or in the alternative, 35 U.S.C. §103(a) over Tuzuki et al. (US 4,179,481), Matsuba et al. (US 5,093,420), Matsuba et al. (EP 392 465) or GB 1378434.

The Examiner concludes that although Tuzuki et al., Matsuba et al. or GB 1378434 do not expressly teach the specific viscosity of the seed or first stage latex (co)polymers, it is *reasonable* that the viscosity of the seed of the first stage latexes of the prior art would possess the presently claimed specific viscosities given that the composition of the polymers are “essentially the same” as in the claimed composition.

Applicants herein amend the claims to clarify the invention. Thereafter, Applicants submit that not all of the claimed limitations are taught or suggested by the cited references, alone or in combination. Furthermore, even if the limitations were properly suggested by the cited documents, unexpectedly superior results are shown throughout the clarified ranges of the invention.

Applicants' claim 1 previously required a processing aid having a (second step) specific viscosity of η_{sp} of at least 0.5, the processing aid being obtained by polymerizing 1-50 parts of monomer mixture (B) and 99-50 parts of a latex copolymer having a specific viscosity of η_{sp} of at least 0.7. There was previously no claimed upper limit to the specific viscosity of the processing aid.

Applicants herein amend the claims to provide, in part, a more definite range of the specific viscosity of the processing aid. The support for the processing aid having the claimed range is found in the original specification on page 12, lines 12-14. In this regard, the specific viscosity of the second step polymer of the present application is 0.63 to 1.00 as in the Examples. Furthermore, the limitations with respect to the average particle diameter of 1500-3000 Å is found on page 12, lines 6-8 of the present application, and in Examples 1-4.

Applicants note that the above cited patents are owned by the present assignee of the present invention, and both the US patent and the EP patent to Matsuba et al. are substantially the same with each other. Among the above, Matsuba et al. is the closest prior art.

Applicants note that in Tuzuki et al., Example 1, the specific viscosity after the second stage polymerization is 1.60 in benzene, namely 0.37 in chloroform by the following formula:

$$\text{Specific viscosity (0.1\% Chloroform, 30°C)} = 0.116) \times \text{the specific viscosity (0.4\% benzene, 30°C)} + 0.18.$$

In Tuzuki et al., Example 1, 0.1 parts by weight of ammonium persulfate was used as a polymerization initiator; though the average particle size after the second stage polymerization is

not clarified, it is described that the average particle sizes of the comparative sample (2) and the latex (3) are “about 1000 Å, respectively”.

From the above, Applicants submit that there is found no disclosure nor suggestion in Tuzuki et al. about being preferable to adjust the specific viscosity after the second stage polymerization to 0.6-1.6 when the average particle size is set forth as 1500-3000 Å, which is one of the characteristics of the revised claims mentioned above nor is it preferable to conduct the second stage polymerization of the latex of which viscosity at the first stage is adjusted to 0.7 or more.

In Matsuba et al., Comparative Example 5 sample (8) has the largest specific viscosity of 5.0 (in benzene), namely 0.76 (in chloroform) according to the above formula, and as the polymerization initiator 0.01 part by weight of potassium persulfate is used.

On the other hand, however, on the column 8 lines 55-57 in Matsuba et al., there is described that, “As to the samples (2) to (8), all of the particle sizes of the two-stage polymers in the obtained latexes were within the range of 500 to 700 Å”, namely their average particle sizes are 700 Å or less, and no disclosure of the specific viscosity at the first stage polymerization is found, as the Examiner so stated. Furthermore, on column 12, line 66 to column 13, line 4 of Matsuba et al., there is described that, “from the results of Table 4, it would be recognized that the particle size of the two-stage polymer in the latex remarkably influences the transparency and the secondary processability of the composition. The compositions of Comparative Example 15 and 16 wherein the particle size of the two-stage polymer is not less than 1000 Å are not

practically used”, and this means that particles having an average particle size of 1000 Å or more had been recognized as not used in the era of 1989.

Additionally, the particle sizes of all of the samples (1) to (27) in Matsuba et al. are; 500-700 Å in (1)-(8), 500-650 Å in (9)-(15), 500-750 Å in (16)-(24) as in the body of the specification and 800 Å in (25), 1250 Å in (26) and 1900 Å in (27) as in Table 4. However, in the samples (26) and (27) wherein the particle size is over 1000 Å, an amount of the polymerization initiator (potassium persulfate as in the present application) is 0.03 part by weight as in the sample 1 of Example 1 of Matsuba et al., and the specific viscosities (in benzene) of these samples (1), (26) and (27) after the second stage polymerization are 2.9-3.3, which correspond to 0.52-0.56 (in chloroform), all of which are less than the lower end of the range of the specific viscosity (0.6) in the revised claims.

From the above, it is clearly understood that the present invention as in the revised claims is novel relating to the cited patents to Tuzuki et al. and Matsuba et al.

From the above comparison between the disclosure of the cited references and the present invention as in the revised claims, it can be understood that the specific viscosity at the first step and the second step are strongly influenced upon an amount of the polymerization initiator (though the amount is not specified in the revised claims) rather than upon the ingredients of the monomer composition. The experimental result of Table 4 of the present application (result obtained by using the polymerization initiator in an amount of 0.001-0.1) also supports the above. In fact, for instance, as mentioned above, in Matsuba 1 Comparative Example 5 (sample (8), use of the polymerization initiator of 0.01 part by weight in the term of potassium persulfate as in the

present application is disclosed, however, the average particle size of the sample (8) is 700 Å or more.

This means that the particle size range at the time when the cited references were filed and that at the time of filing date of the present invention are quite different from each other: the state of the art during the time of filing of Matsuba did not include consideration of lowering of transparency of a polyvinyl chloride in a case of large particle size, but toward the filing time of the present application, the technologies concerned have extensively been developed so that it has been more important to suppress run-away reaction by generation of polymerization heat under setting forth the particle size of 1500 Å or more as in the revised claims.

All of the cited references are quite silent on those matters.

From the above, it should be recognized the present invention as claimed in the revised claims is unobvious from the cited reference even to a skilled artisan.

In order to support the above assertion of the criticality of the specific viscosity at the first step and the second step, some results of experiments conducted by the researcher of KANEKA under the form of Declaration Form under 37 C.F.R. §1.132 are enclosed herewith.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

Application No. 10/730,887
Attorney Docket No. 000466A

Amendment under 37 C.F.R. §1.111
Amendment filed July 12, 2007

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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Enclosure: Declaration under 37 C.F.R. §1.132